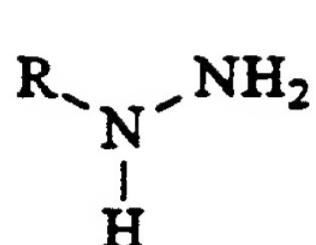
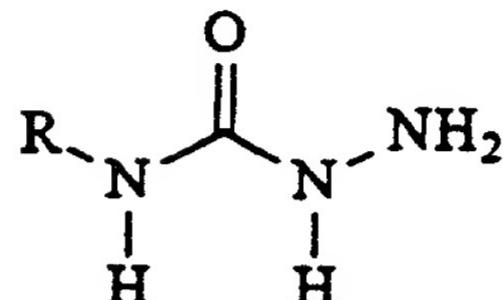


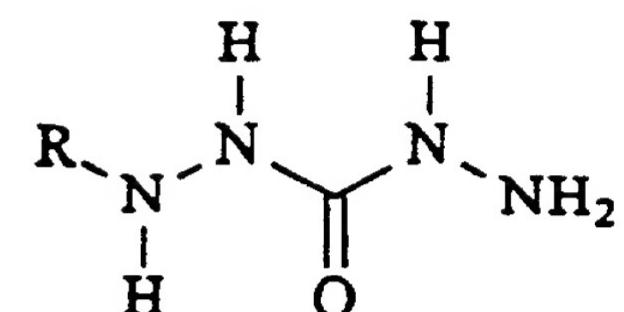
Title: HYDRAZINE-BASED AND CARBONYL-BASED  
BIFUNCTIONAL CROSSLINKING REAGENTS.  
Applicant: Schwartz, D.A.  
Serial No. 09/815,978 Filed: March 22, 2001  
Our Docket No.: 37154-753



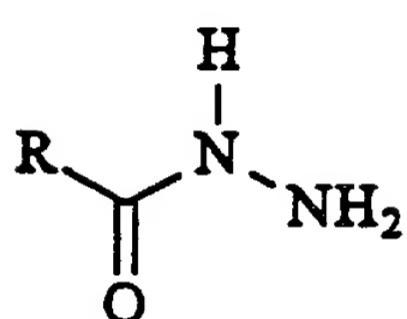
hydrazine



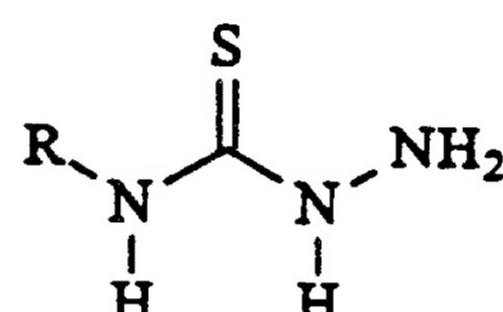
semicarbazide



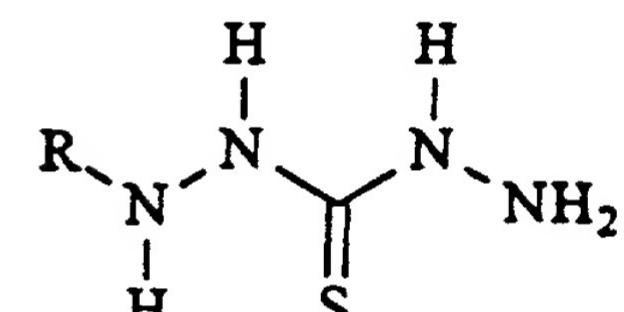
carbazide



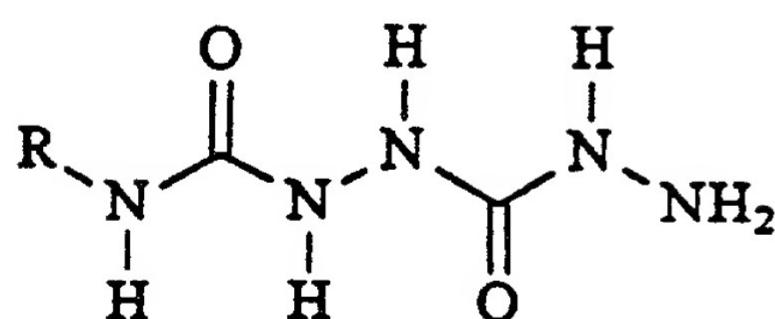
hydrazide



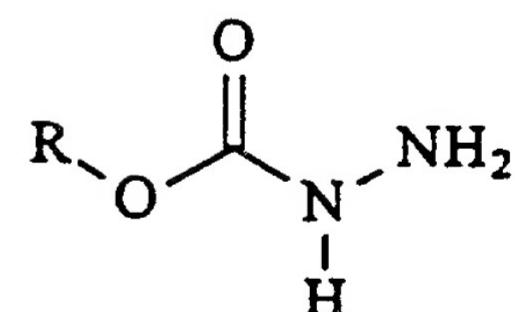
thiosemicarbazide



thiocarbazide



carbonic acid dihydrazine



hydrazine carboxylate

FIG. 1

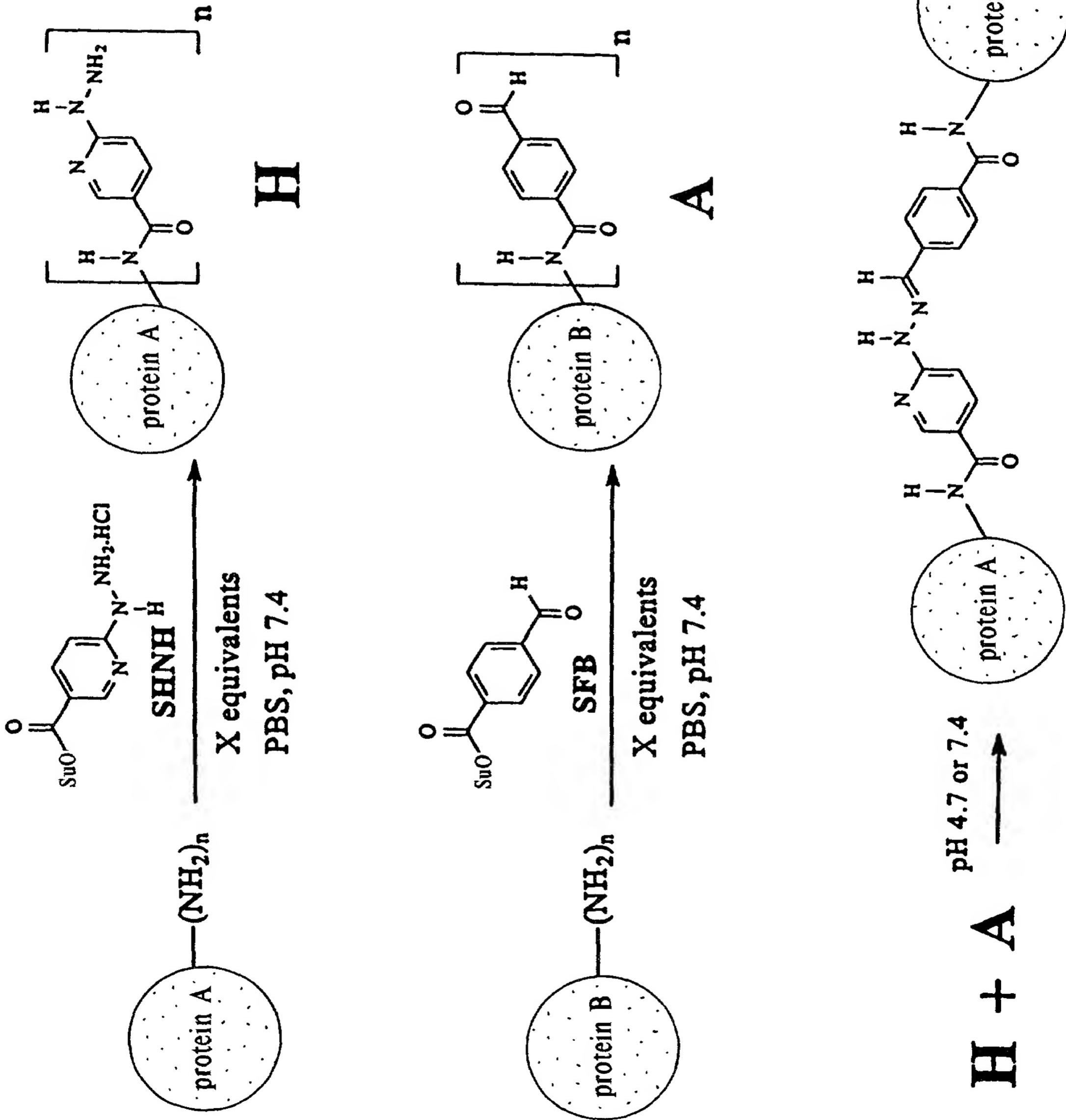


FIG. 2

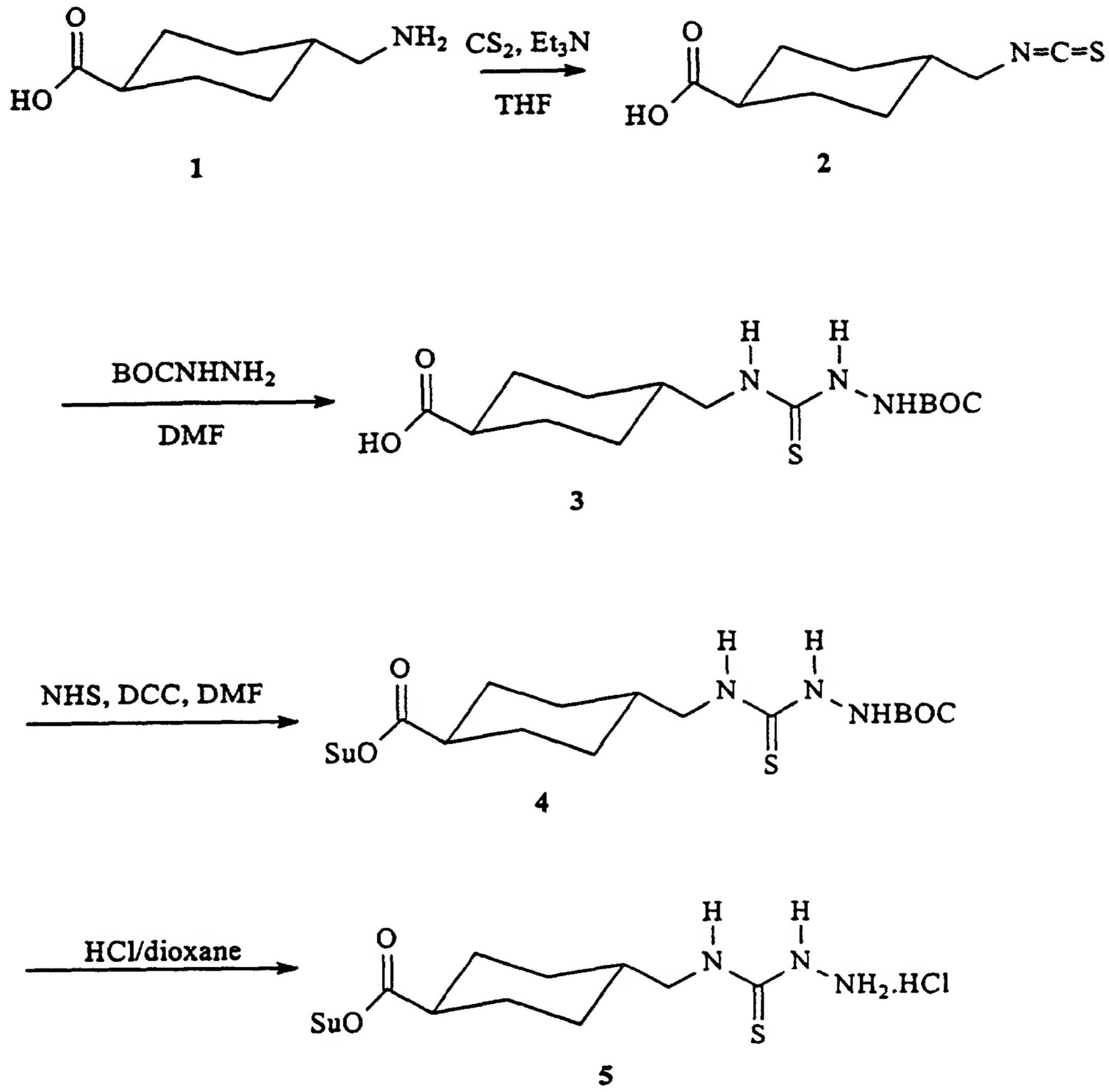


FIG. 3

Title: HYDRAZINE-BASED AND CARBONYL-BASED

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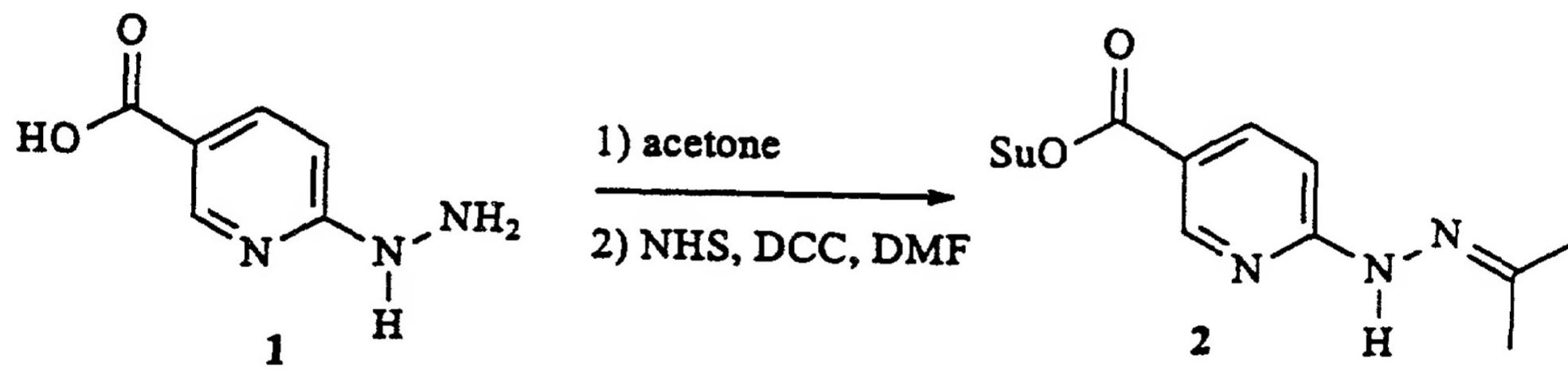
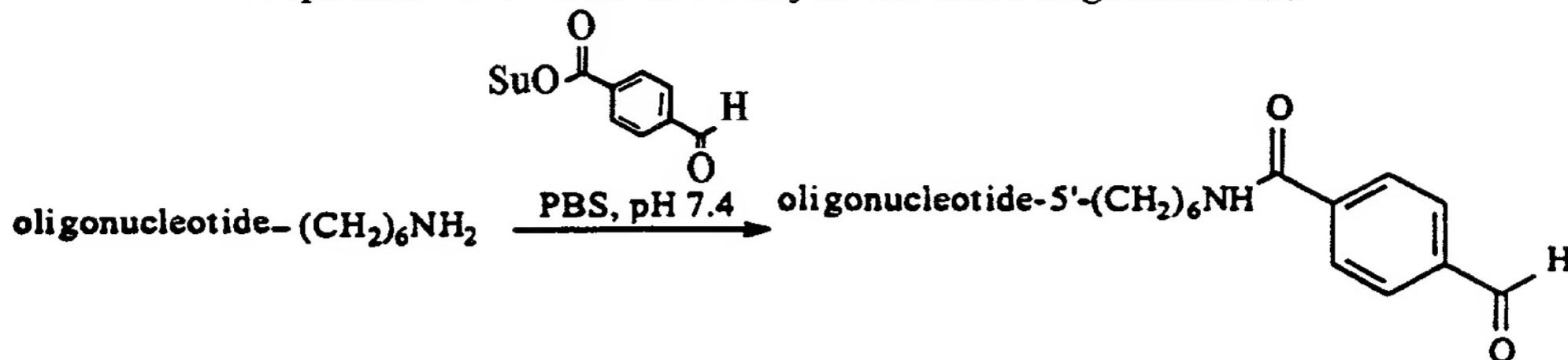
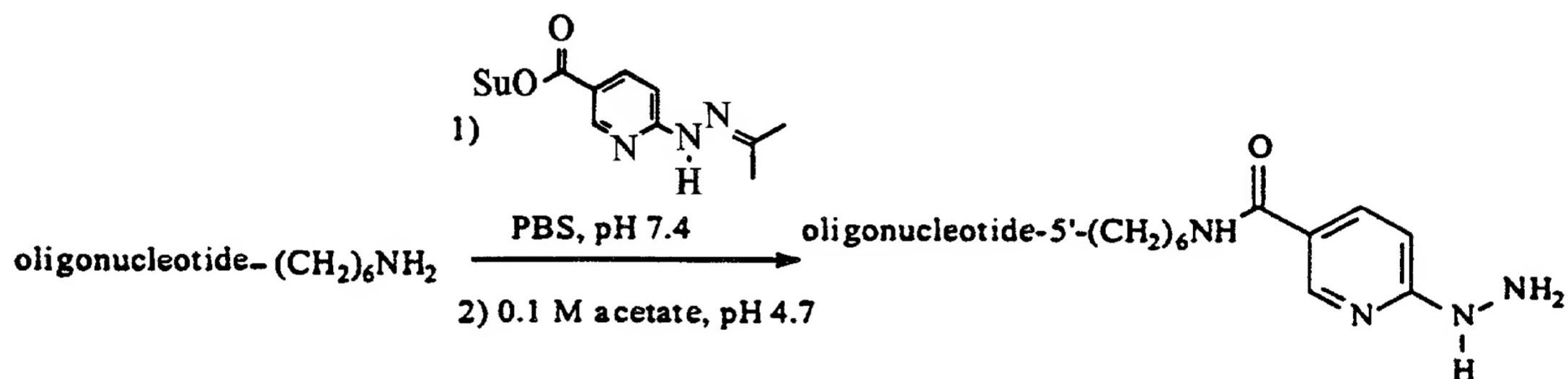


FIG. 4

Preparation of 5'-aromatic aldehyde-modified oligonucleotide:



Preparation of 5'-heteroaromatic hydrazine-modified oligonucleotide:



Conjugation of hydrazino-modified oligonucleotide to aldehyde-modified oligonucleotide

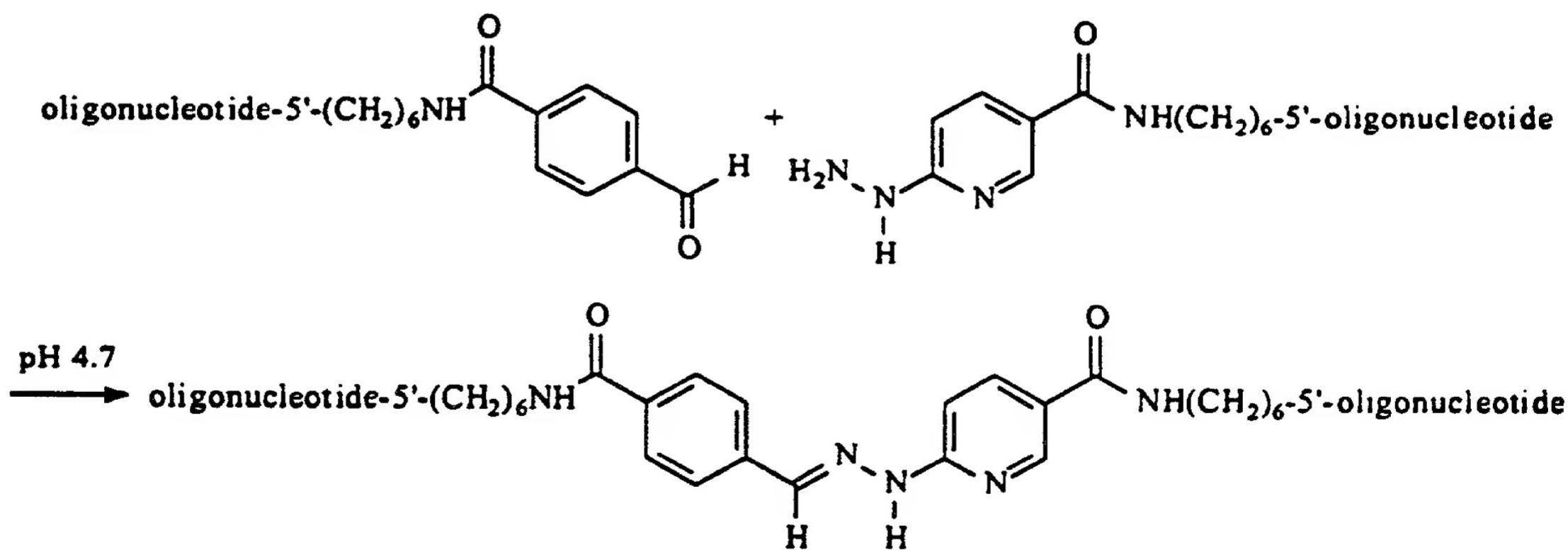
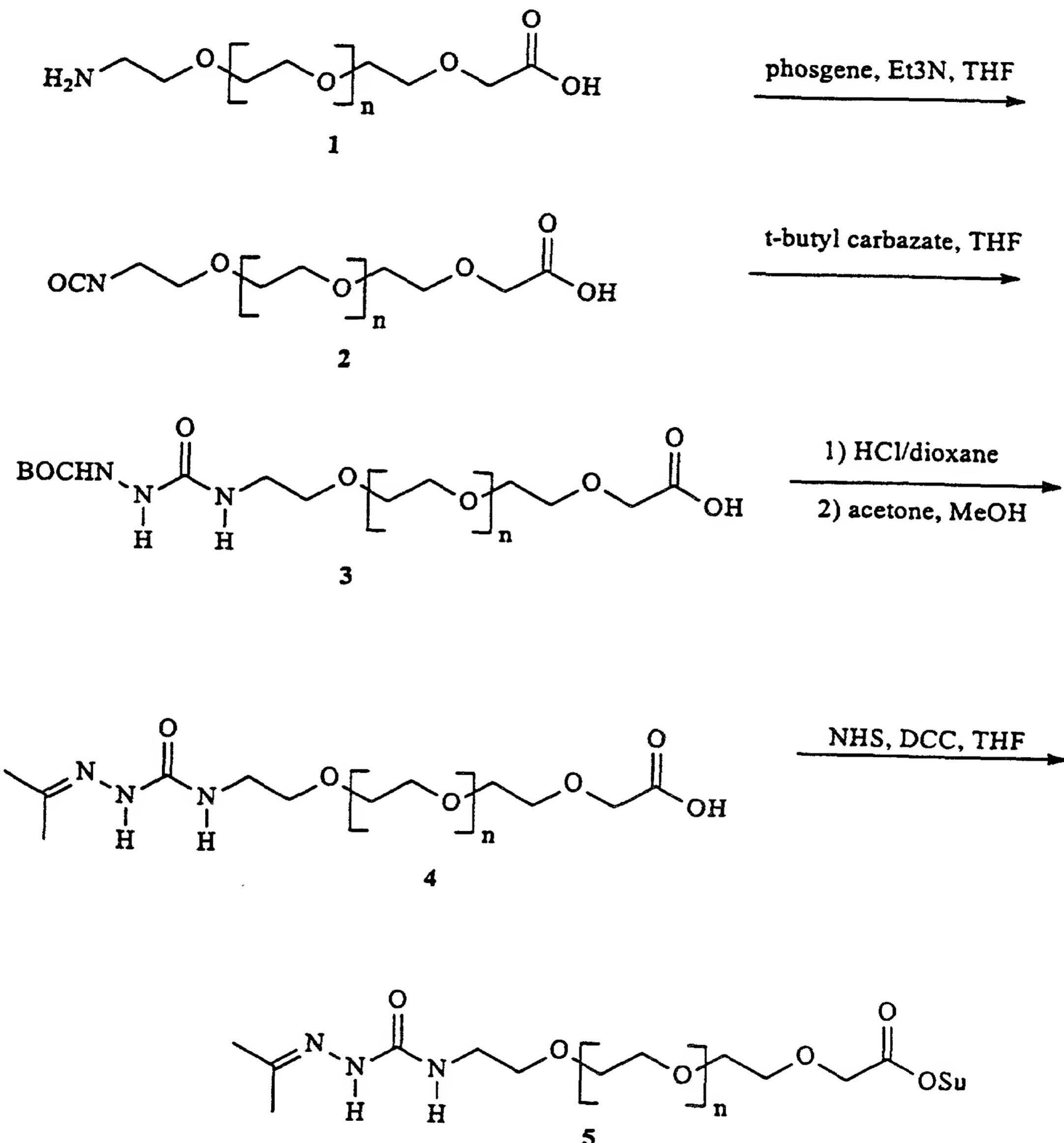
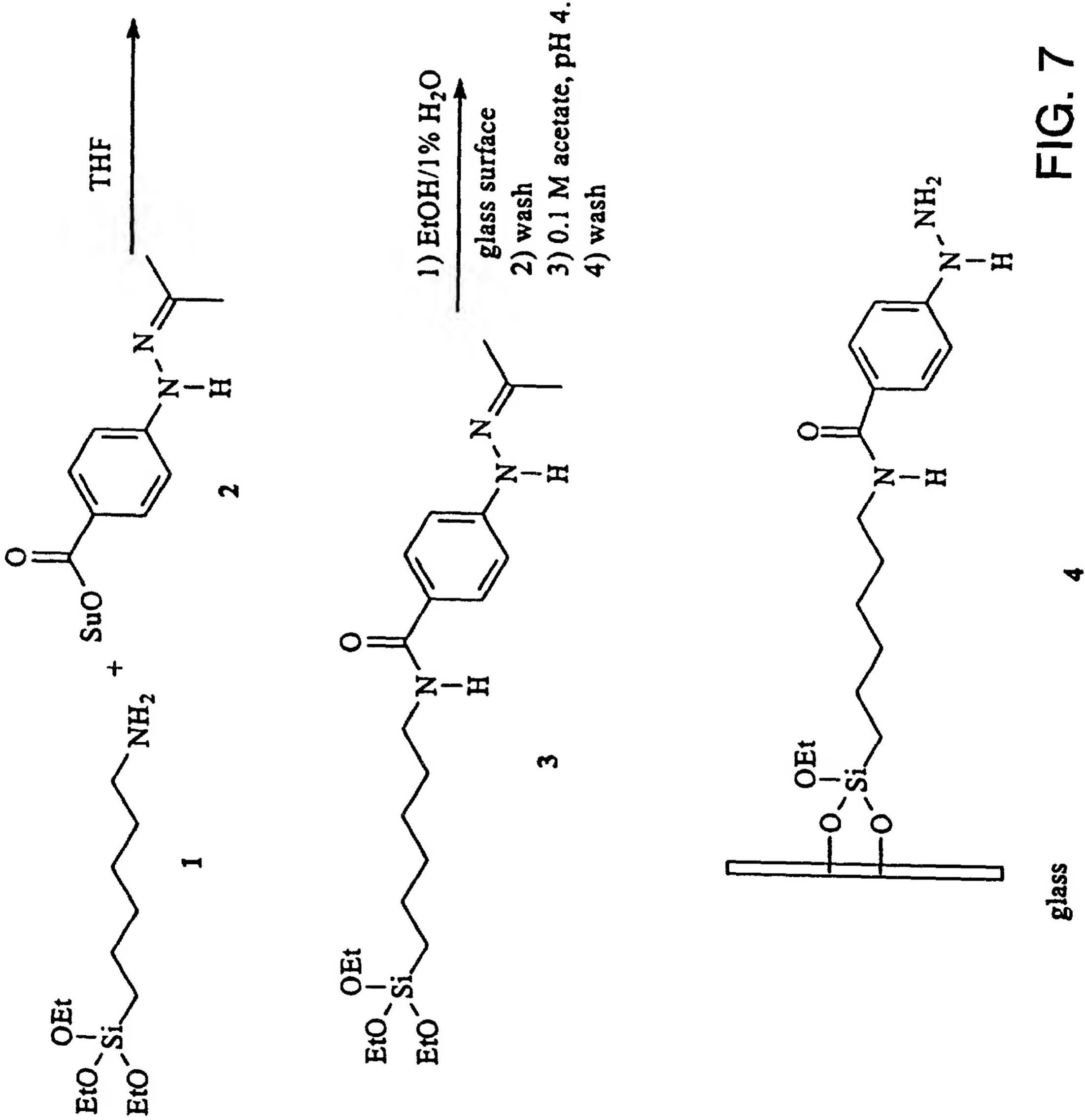


FIG. 5



**FIG. 6**



Title: HYDRAZINE-BASED AND CARBONYL-BASED

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